# Knowledge Capture and Transition in the Michigan Department of Agriculture

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# What is Knowledge Management?

- Making more efficient use of the human **knowledge and skill** that exists within an organization.

  Three main questions:

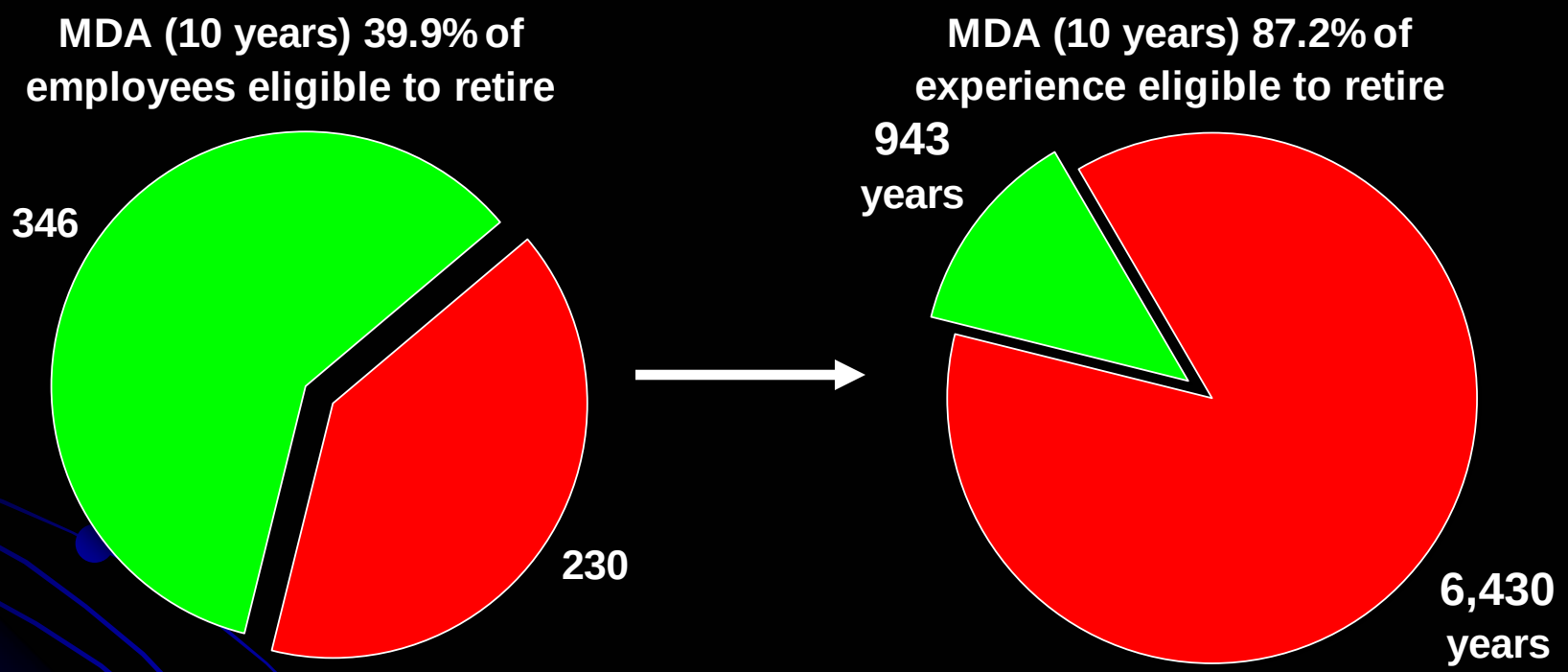
  **1.** Specifically, what knowledge is being lost?

  **2.** What are the business consequences of losing each item of knowledge?

  **3.** What can we do about each item?

# What is “critical knowledge”?

- **Explicit -can be written or codified in protocols, desk manuals, databases, etc.**
- **Implicit - the “ask Bob syndrome”-typically fact based, ‘know-how’**
- **Tacit - cognitive and technical skills, sometimes historic, intuitive, developed over years**
  - **Knowledge gained through personal or cultural experience**




- Economic Pressure to Reduce Labor Cost = Not all retirees will be replaced
- Increasing Career Mobility

*2006 figures based on Civil Service estimates

# Some methods already in use

- Desk manuals
- Databases
- Limited cross training
  - “Steer Your Career”
- Limited mentoring
  - “Project Lead”
  - Leadership Academy
- Hiring contract employees to fill gaps

# Knowledge Retention

- **Use a variety of methods**
- **Having knowledge of critical info/skills held and risk of loss is most important in planning**
- **Cannot capture/transfer knowledge in written format only**
- **Requires agency commitment to ongoing action**

- 2006 LA joint Action Learning Project team researched program developed by Tennessee Valley Authority (TVA) to address knowledge loss.

- Adopted by MDA Succession Planning committee

# MDA actions

- Food & Dairy Division pilot 2007
- Super 8 Initiative
- Department training – April 2008
  - Each division has its ‘facilitators’
  - Rate knowledge loss risk
  - ID ‘critical’ positions based on retirement eligibility, experience and rarity of knowledge
  - Devise knowledge retention plans for succession planning

# Knowledge Loss Vulnerability Project Goals

- Identifying where critical positions/employees where knowledge loss is greatest threat in each division
- Identifying and prioritizing the specific knowledge or skills at risk --“cherry picking”
- Developing concrete, actionable recommendations for Division or Department administration to mitigate this loss (Knowledge Retention Plans)

# TVA Program Overview

- Identifies critical knowledge & positions-”Know what you know”
- Determines risk to agency if lost
- Written questionnaire and visual/audio interviews to assess critical knowledge/skills (including implicit) and best capture/transfer
- Knowledge Retention Plan (KRP) for individual employees to specify best methods for capture
- KRP for agency/division to use for tracking and planning purposes

# Steps to Project

- **Step 1-Knowledge Loss Risk Assessment**
- **Step 2-Written questionnaire and visual/audio interviews**
- **Step 3-Critical Skills Analysis**
- **Step 4- Knowledge Disposition**
- **Step 5-Knowledge Retention Plan**

# Initial employee evaluation

- Retirement eligibility ($R_E$) - based upon employee estimates or calculated based on age and time in service data
- Criticality ($R_P$) – based on supervisors' estimates on criticality of employee's knowledge
- Each factor rated 1-5, 5 highest importance
- Calculated knowledge loss risk factor ($R_{TA}$)

$$\mathbf{R_E \times R_P = R_{TA}}$$

- A score of 15 or above was deemed actionable*

# Risk categories

- Employees fall into one of four categories based on risk
  - High Priority (20-25)
  - Priority (16-19)
  - High Importance (10-15)
  - Important
- Depending on number of people in each category, you should center your efforts on those in the High Priority and Priority categories.
- Share list of categorized employees with supervisors/division directors

**Step 1-example**
**Analysis of Knowledge Loss Risk Factor for Food & Dairy Division, Michigan Department of Agriculture**

**20-25 High Priority** - Immediate action needed. Specific replacement action plans with due dates will be developed to include: method of replacement, knowledge management assessment, specific training required, on-the-job training/shadowing with incumbent.

| Employee | Position held |
|---|---|
| Agra Kulcher | Quality Assurance Specialist |
| Tracy Barnes | Exotic Species Section Manager |

**16-19 Priority rating** - Staffing plans should be established to address method and timing of replacement, recruitment efforts, training, shadowing with current incumbent.

| Employee | Position held |
|---|---|
| Tom Smith | Pesticide Industry Specialist 13 |

**10-15 High Importance**-Look ahead on how the position will be filled/work will be accomplished. College recruiting, training programs, process improvements, reinvestment.

| Employee | Position held |
|---|---|
| Joe Smith | Dairy Pharmacist |

**1-9 Important** - Recognize the functions of the position and determine the replacement need. Rated as 8 or 9, OR position may have been identified as having unique skills or knowledge

| Employee | Position held |
|---|---|
| Betsy Miller | Secretary |
| Don Donaldson | Pesticide Industry Technician |
| Bill Williamson | Licensing Support |
| Sheila Shields | Analyst |

## KNOWLEDGE RETENTION PLAN

| Employee : | Position: Engr. Mech. General (NUC) | Position Risk Factor: 4<br>Retirement Factor: 5 | Total Attrition Factor: 20 |
|---|---|---|---|

Summary and Situation Assessment:

The incumbent has in depth knowledge of and expertise in piping analysis with emphasis on use of the T Pipe software. This software is unique to SQN and little duplication of knowledge exists. Though a replacement person with an en gineering degree could become proficient in the use of this software in about six months, at least two years on-the-job training is needed to respond quickly to urgent questions related to piping analysis. In addition to the T Pipe system, there must be extensive knowledge of the Class II computer system, SDP – NEDP9, and SQN LDC 13.1 and 24.2. Though a person with a two year degree may be knowledgeable, it is preferable to have someone with a four year degree in either Civil or Mechanical Engineering.

Currently Employee A is being cross-trained on the T Pipe system. Employee B also works with this system and has significant knowledge. Employee C and Employee D work in the Chattanooga TVAN Corporate office and also have knowledge of the system.

Because the T Pipe system is unique to SQN there is no external training on its use. However ASME does provide training on piping analysis and code requirements.

| Knowledge or Skill | Criticality (1-5) | Actions *(Required of Criticality 4-5)* List steps which can and will be taken to retain this critical knowledge/skill and/or minimize the impact of its loss) | Target Date(s) for Completion | Status and Issues |
|---|---|---|---|---|
| Rigorous and alternate piping analysis, component qualification of code components and pipe rupture analysis skil ls | 5 | • Identify a replacement person for the critical skills<br>• Replacement person complete ASME courses in piping analysis and code requirements<br>• Replacement person develop a working knowledge of T-Pipe Code, ASME Code, procedures and criteria through reading a nd mentoring of _____ and _____. | Dec 2004<br>Sept 2005<br><br>Sept 2005 | ~~Employee A~~and ~~Employee B~~are being crossed trained in TPipe.<br><br>Will send both to ASME Course when offered by TVA Training.<br><br>Both being Mentored |
| **Development Plans** | 5 | • Supervisor assign repl acement person "trail tasks" under the direction of _____ and/or ____<br>• Replacement complete qualification card under mentor sponsorship<br>• Include mentoring in _____ and ___ PR&D and developmental goals in replacement individual<br>• Recruit/hire person to replace replacement person | March 2005<br><br>Dec 2005<br><br>Sept 2004<br><br>Oct 2005 | On going replacements are |
| **Documentation** | 5 | Incumbent to develop a piping analysis, component qualification and pipe rupture reference library of handbooks, procedures, criteria and process in co njunction with replacement person. | Sept 2004 | On going will be completed by Sept. |

Knowledge Retention Plan Prepared by: _OE Consultant_____ Date: November 6 , 2003
Last Update: _7/22/04; Manager__

# Results so far

- 274 staff persons have been rated as part of the Vulnerability Assessment
- 29 have been identified as “High Priority” requiring rapid action to prevent knowledge loss/lack of trained replacements
- All MDA divisions are in the process of completing KRPs for use in Dept workforce planning and hiring
- Each Division is currently responsible for determining best methods of capture/transition and insuring that they take place.

# As we continue…

- Develop knowledge retention plans for more employees to incorporate into the Division KRP
- Simplify and make knowledge capture and transition part of normal routine for employees.
- Build redundancy in programs/duties whenever possible into workload planning, etc.

# Recommendations

1) Train facilitators within agency
2) ID critical knowledge/skills – agency knowledge "index" & risk in single MDA division as pilot
3) Develop knowledge retention plans/strategies
    a. Person-to-person transfer (employee overlap, mentoring, cross-training, etc.)
    b. Store critical information (desk manuals, procedures, digital capture, etc.)
4) Create individuals & division KRP
5) Implement plans/strategies
6) Make adjustments as needed for agency